Association of lipoprotein(a) with lower extremity artery disease and cardiovascular outcomes after peripheral revascularization

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AIM

To evaluate the relationship of lipoprotein(a) [Lp(a)] level with lower extremity artery disease (LEAD) and cardiovascular outcomes after lower extremity revascularization.

MATERIAL AND METHODS

The study included 284 patients with LEAD and 338 patients without significant atherosclerosis of coronary, carotid and lower limbs arteries (control group). Of 284 patients with LEAD, 111 underwent lower extremity revascularization. Lp(a) concentration was determined by our home ELISA. Atherosclerotic lesions of lower limb arteries were assessed with ultrasound and/or angiography. LEAD is defined by the presence of severe (≥50%) atherosclerotic stenosis and ankle-brachial index <0.9. Coronary heart disease was diagnosed in 73% of patients with LEAD and severe carotid atherosclerosis in 60%. The results are given as means and standard deviations, medians and interquartile ranges, or numbers (percentages). Mann-Whitney U test was used while comparing the quantitative characteristics of two groups. In order to compare frequency data between groups Fisher's exact test was used. The cardiovascular outcomes were recurrent intermittent claudication, limb amputation, stroke, transitory ischaemic attack, non-fatal myocardial infarction, unstable angina, repeated revascularization, cardiovascular death.

RESULTS

Table 1. Baseline characteristics of study groups

	n=622	
	LEAD n=285	Control n=337
Age, years	69±9 *	56±12
Male gender, n (%)	236 (83%) *	150 (45%)
Hypertension, n (%)	242 (85%) *	195 (58%)
Smoking, n (%)	175 (61%) *	94 (28%)
Type 2 diabetes, n (%)	81 (28%) *	49 (15%)
Total cholesterol, mmol/l	5.0±1.4 *	6.1±1.5
Triglycerides, mmol/l	1.8±1.2 *	2.0±1.0
HDL-cholesterol, mmol/l	1.2±0.4 *	1.3±0.4
LDL-cholesterol, mmol/l	2.9±1.2 *	3.9±1.3
LDL-cholesterol corr, mmol/l	2.5±1.1 *	3.7±1.3
Statin therapy, n (%)	258 (91%) *	78 (23%)

* p<0.01

Figure 2. Relationship of Lp(a) level with LEAD

Figure 3. Kaplan-Meier survival curves (cardiovascular outcomes in 111 patients who underwent lower extremity revascularization depending on the Lp(a) level)

Figure 1. Lp(a) excess in patients with LEAD and control group patients

Table 2. Logistic regression analysis of the risk of LEAD

	OR	95% CI
Age	1.11 *	1.08-1.14
Male gender	9.02 *	5.09-15.96
Hypertension	2.55 *	1.51-4.31
Type 2 diabetes	1.65 *	1.24-2.19
Smoking	3.26 *	2.00-5.33
Lp(a) ≥30 mg/dl	6.15 *	3.20-11.80
Lp(a) ≥50 mg/dl	6.61 *	3.13-13.96

* p<0.01

CONCLUSIONS

Lp(a) level is an independent predictor of LEAD. Elevated Lp(a) is associated with two-fold increased risk of cardiovascular outcomes after lower extremity revascularization.

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